

**Resources**

(AUD=includes audio and/or visual)

**ABOUT OUR SPEAKER**

Dr. Joshua Willis, Oceanographer

<http://science.jpl.nasa.gov/people/Willis/>

"Willis honored for climate change publicity" (October 2008)

<http://sealevel.jpl.nasa.gov/newsroom/features/200810-2.html>

"It's a Sure Bet": Dr. Willis explains Climate Change in the NASA JPL blog

<http://blogs.jpl.nasa.gov/?p=8>

"Oceans of Climate Change" NASA education video featuring Dr. Josh Willis

[http://www.nasa.gov/mp4/332473main\\_earth-20090421-320.mp4](http://www.nasa.gov/mp4/332473main_earth-20090421-320.mp4)

Transcript: <http://www.nasa.gov/multimedia/podcasting/jpl-earth-20090421.html>

"Josh Willis on oceans and Earth's energy balance" from EarthSky (~8 min)

<http://earthsky.org/earth/josh-willis-on-earths-energy-balance>

"The Mystery of Global Warming's Missing Heat" from National Public Radio

<http://www.npr.org/templates/story/story.php?storyId=88520025>

"Tall Oceans and Global Warming" Jet Propulsion Laboratory podcasts (June 2008)

<http://www.jpl.nasa.gov/podcast/ostm20080617.cfm>

**Related NASA satellite missions and other instruments**

All ocean circulation missions, including OSTM and JASON

<http://science.jpl.nasa.gov/COSE/OceanCirculation/projects.cfm>

Argo: A global array of 3,000 free-drifting floats that measure the temperature and salinity of the upper 2000m of the ocean.

<http://www.argo.ucsd.edu/>

**BACKGROUND**

Global Climate Change, NASA's Eyes on the Earth

<http://climate.nasa.gov/>

The Greenhouse Effect, National Geographic

<http://environment.nationalgeographic.com/environment/global-warming/gw-overview-interactive.html>

"What's in a Name? Global Warming vs. Climate Change" NASA

[http://www.nasa.gov/topics/earth/features/climate\\_by\\_any\\_other\\_name.html](http://www.nasa.gov/topics/earth/features/climate_by_any_other_name.html)

COSEE-West

"Global Warming Guaranteed: What the ocean tells us about climate change"

January 26, 2011 & January, 29, 2011

### **Resources**

EPA Website for Kids

<http://epa.gov/climatechange/kids/gw.html>

Ocean in Motion, Ocean and Climate, NASA

<http://oceanmotion.org/html/background/climate.htm>

El Nino and La Nina, high resolution images available, NASA

[http://www.nasa.gov/vision/earth/lookingatearth/elnino\\_split.html](http://www.nasa.gov/vision/earth/lookingatearth/elnino_split.html)

El Nino, Southern Oscillation for kids

<http://kids.earth.nasa.gov/archive/nino/intro.html>

El Nino explanation and images (click on "Tracking El Nino"), NASA JPL

[http://www.jpl.nasa.gov/earth/ocean\\_motion/el\\_nino\\_index.cfm](http://www.jpl.nasa.gov/earth/ocean_motion/el_nino_index.cfm)

Pacific Decadal Oscillation (PDO)

<http://jisao.washington.edu/pdo/>

La Nina and PDO, Earth Observatory, NASA

<http://earthobservatory.nasa.gov/IOTD/view.php?id=8703>

### Misconceptions

Children's misconceptions about weather: A review of the literature by Laura Henriques

<http://www.csulb.edu/~lhenriqu/NARST2000.htm>

Common Misconceptions about Abrupt Climate Change, WHOI

<http://www.whoi.edu/page.do?pid=12455&tid=282&cid=10149>

US Global Change Research Information Office

<http://www.gcric.org/gwcc/misconceptions.html>

### **ARTICLES**

Signs from Earth: The Big Thaw, National Geographic

<http://environment.nationalgeographic.com/environment/global-warming/big-thaw.html>

Thinning on top, The Economist (June 2010)

<http://www.economist.com/node/16369706>

### **LESSON PLANS**

Clue Into Climate, KQED

<http://www.kqed.org/education/educators/clue-into-climate/>

U.S. Global Change Research Program

<http://globalchange.gov/resources/educators/toolkit/materials>

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**Resources**

Union of Concerned Scientists, Teaching teens about global warming

[http://www.ucsusa.org/global\\_warming/science\\_and\\_impacts/impacts/global-warming-materials-for.html](http://www.ucsusa.org/global_warming/science_and_impacts/impacts/global-warming-materials-for.html)

NCSE-NASA Interdisciplinary Climate Change Education

[http://www.eoearth.org/article/NCSE-NASA\\_Interdisciplinary\\_Climate\\_Change\\_Education](http://www.eoearth.org/article/NCSE-NASA_Interdisciplinary_Climate_Change_Education)

Fireproof balloon (VID)

<http://www.weirdsciencekids.com/fireproofballoon.html>

Facing the Future, Cool school challenge

<http://www.facingthefuture.org/ServiceLearning/ClimateChangeActionProjects/CoolSchoolChallenge/tabid/330/Default.aspx>

CA Science Education Standards, and Ocean Literacy & Climate Literacy Principles related to Weather, Climate, and the Ocean

[http://www.usc.edu/org/cosee-west/Sep2910/StandardsPrinciples\\_2010-09-28Weather&Climate.pdf](http://www.usc.edu/org/cosee-west/Sep2910/StandardsPrinciples_2010-09-28Weather&Climate.pdf)

**WEBSITES**

NASA, Global Ice Viewer

<http://climate.nasa.gov/GlobalIceViewer/index.cfm>

Teachers Guide to High Quality Educational Materials on Climate Change and Global Warming, Carnegie Mellon University

<http://hdgc.epp.cmu.edu/teachersguide/teachersguide.htm>

Rachel Pike: The science behind a climate headline (about 4 min) (AUD)

[http://www.ted.com/talks/rachel\\_pike\\_the\\_science\\_behind\\_a\\_climate\\_headline.html](http://www.ted.com/talks/rachel_pike_the_science_behind_a_climate_headline.html)

NASA: Climate change and the global ocean (AUD)

<http://www.youtube.com/watch?v=GiLfgoSd3mg>

Eyes on the Earth 3D:

<http://climate.nasa.gov/Eyes/eyes.html>

"Americans Fail the Climate Quiz" NPR, Dec 2010

<http://www.npr.org/2010/12/03/131785444/Americans-Fail-The-Climate-Quiz>

Yale Project on Climate Change

<http://environment.yale.edu/climate/>

<http://environment.yale.edu/climate/publications/knowledge-of-climate-change>

NPR Climate Connections

<http://www.npr.org/series/9657621/climate-connections>

COSEE-West  
"Global Warming Guaranteed: What the ocean tells us about climate change"  
January 26, 2011 & January, 29, 2011

**Resources**

Center for Ocean Solutions-Climate Change Initiative

<http://www.centerforoceansolutions.org/initiatives/climate-change-initiative>

Union of Concerned Scientists, Global warming map

<http://www.climatehotmap.org/index.html>

**MISCONCEPTIONS & Talking to climate change skeptics**

Children's misconceptions about weather: A review of the literature by Laura Henriques

<http://www.csulb.edu/~lhenriqu/NARST2000.htm>

Common Misconceptions about Abrupt Climate Change, WHOI

<http://www.whoi.edu/page.do?pid=12455&tid=282&cid=10149>

US Global Change Research Information Office

<http://www.gcrio.org/gwcc/misconceptions.html>

CIRES Education and Outreach, Common misconceptions about climate and climate change

<http://cires.colorado.edu/education/outreach/climateCommunication/CC%20Misconceptions%20Handout.pdf>

Realities vs. Misconceptions about the Science of Climate Change, Pew Center for Global Climate Change

[http://www.pewclimate.org/docUploads/climate-science-misconceptions-and-facts-aug2009\\_0.pdf](http://www.pewclimate.org/docUploads/climate-science-misconceptions-and-facts-aug2009_0.pdf)

How to Talk to a Climate Skeptic: Responses to the most common skeptical arguments on global warming, GRIST.org

<http://www.grist.org/article/series/skeptics/>

It can also be found here:

[http://scienceblogs.com/illconsidered/2008/07/how\\_to\\_talk\\_to\\_a\\_sceptic.php](http://scienceblogs.com/illconsidered/2008/07/how_to_talk_to_a_sceptic.php)

**PUBLICATIONS (BOOKS, JOURNALS)**

How We Know What We Know about Our Changing Climate.

Carol L. Malnor, 2008, ISBN: 978-1-58469-130-3

Excerpts available:

<http://www.dawnpub.com/activities/Changing%20Climate%20Sampler%20w-sales%20page.pdf>

A Teacher's Guide to How We Know What We Know about Our Changing Climate

Carol L. Malnor, 2008, ISBN: 978-1-58469-105-1

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"Global Warming Guaranteed: What the ocean tells us about climate change"

January 26, 2011 & January, 29, 2011

**Resources**

Teaching Teachers: Bringing First Rate Science to the Elementary Classroom  
NSTA Press Journals Collection, 2002, ISBN: 0-87355-203-2

The Usborne Internet-Linked Science Encyclopedia  
Education Development Corporation, 2002, ISBN: 978079450331-4

Dealing with Science Misconceptions

California Journal of Science Education, Vol V, Issue 2, Spring 2005

[http://www.casience.org/csta/pub\\_misconceptionsjournal.asp](http://www.casience.org/csta/pub_misconceptionsjournal.asp)

Dealing with Science Misconceptions, Part II

California Journal of Science Education, Vol VII, Issue 2, Spring 2007

[http://www.casience.org/csta/pub\\_misconceptions2journal.asp](http://www.casience.org/csta/pub_misconceptions2journal.asp)

"The Psychology of Climate Change Communication: A Guide for Scientists, Journalists, Educators, Political Aides, and the Interested Public" CRED=Center for Research on Environmental Decisions, Columbia University, <http://cred.columbia.edu/guide>